UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/698,121 | 10/31/2003 | Dominic Cosgrove | 249.0007 0101 | 8958 |

26813 7590 06/06/2007

MUETING, RAASCH & GEBHARDT, P.A.
P.O. BOX 581415
MINNEAPOLIS, MN 55458

| EXAMINER | |
|---|---|
| HADDAD, MAHER M | |
| ART UNIT | PAPER NUMBER |
| 1644 | |

| MAIL DATE | DELIVERY MODE |
|---|---|
| 06/06/2007 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/698,121 | COSGROVE, DOMINIC | |
| | Examiner | Art Unit | |
| | Maher M. Haddad | 1644 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *11 April 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *6-8,10-13,15,17,21,23,25,28,43-52,54-59 and 61-71* is/are pending in the application.

4a) Of the above claim(s) *61-66* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *6-8, 10-13, 15, 17, 21, 23, 25, 28, 43-52, 54 and 67- 71* is/are rejected.

7)☒ Claim(s) *55-59* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/11/07 has been entered.

2. Claims 6-8, 10-13, 15, 17, 21, 23, 25, 28, 43-52, 54-59 and 61-71 are pending.

3. Claims 61-66 are withdrawn from further consideration by the Examiner, 37 C.F.R. § 1.142(b) as being drawn to nonelected inventions.

4. Claims 6-8, 10-13, 15, 17, 21, 23, 25, 28, 43-52, 54-59 and 67- 71 are under examination as they read on an as they read on a method of treating a patient having a chronic inflammatory disease with a blocking agent wherein the blocking agent is a neutralizing antibody and renal fibrosis, crescentic glomerulonephritis and SEQ ID NO: 1 as the species.

5. Claims 1-7, 10-17, 20-23 and 26-28 are under examination as they read on a method of treating inflammation in a subject, comprising administering to the subject an αEβ7 Mab and further α4β7 wherein the inflammattion is inflammatory bowel disease, asthma, rheumatoid arthritis, autoimmune disease, and graft versus host disease as the species.

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

*The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.*

7. Claims 7-8, 10, 12, 28, 54 and 67 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a method of treating a patient having renal fibrosis or crescentic glomerulonephritis comprising administering to the patient an antibody to collagen XIII, or a method of treating inflammation in a subject wherein integrin α1β1-positive interstitial monocytes accumulation is observed, the method comprising administering to the subject an antibody to Collagen XIII that disrupts the interaction between Collagen XIII and α1β1 integrin, does not reasonably provide **enablement** for a method for treating a subject having any "inflammatory disease or other condition" where integrin α1β1-positive interstitial monocyte accumulation is observed, the method comprising administering to the subject an antibody to Collagen XIII that disrupts the interaction between Collagen XIII and α1β1integrin. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and or use the invention commensurate in scope with this claim.

The specification disclosure does not enable one skilled in the art to practice the invention without an undue amount of experimentation.

Applicant points to Dr. Cosgrove declaration in support that all the claim are enabled.

The Cosgrove declaration under 37 CFR 1.1132, filed 4/11/07 only provided showing that the role of anti-Collagen XIII antibody, which recognizes claimed SEQ ID NO: 1 in Alport (DKO), wherein the interstitial monocytes accumulation/efflux is reduced, wherein the myofibroblast accumulation and fibrosis are attenuated in renal cortex. The Declaration is silence on whether the anti-Collagen XIII antibody extends the life of Alport mice or not.

Besides the chronically inflamed kidneys the declaration does not provide a list of all inflammatory diseases or conditions, where integrin $\alpha 1\beta 1$-positive interstitial monocytes accumulation is observed, wherein such diseases or conditions can be treated with the claimed anti-Collagen XIII. The skilled medical practitioner would not be able to identify all the chronic inflammatory diseases or conditions associated with this interaction of Collagen XIII with $\alpha 1\beta 1$ integrin positive monocytes based on the disclosure. The skilled medical practitioner would not look at a chronic inflammatory disease and characterize the disease to be associated with the interaction of Collagen XIII with $\alpha 1\beta 1$ integrin positive monocytes. Besides the specific diseases recited in claim 11, the medical practitioner would not know which chronic inflammatory disease would full within the claimed invention.

Reasonable correlation must exist between the scope of the claims and scope of the enablement set forth. In view on the quantity of experimentation necessary the limited working examples, the nature of the invention, the state of the prior art, the unpredictability of the art and the breadth of the claims, it would take undue trials and errors to practice the claimed invention.

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> *(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.*

9. Claims 6-8, 11-13, 15, 17, 23, 28, 43-44, 46-52 and 68-71 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 99/61040 (of record) in view of Nykvist *et al* (JBC 275(11):8255-8261, 2000), U.S. Pat. No. 5,567,440 and Hagg *et al* (JBC, 273(25):15590-15597, 1998, IDS ref).

The WO '040 publication teaches and claims a of treating renal fibrosis or crescentic glomerulonephritis (chronic inflammatory diseases of the kidney), in a patient comprising

administering to the patient an effective amount of an α1β1 integrin receptor inhibitor (a blocking agent) (see published claims 1 and 12-13 in particular), wherein the α1β1 integrin receptor inhibitor is a blocking agent that binds to the α1β1 integrin receptor binding site on the surface of a kidney cell (see published claim 8, in particular), wherein the agent is an antibody (see published claim 11 and Example 5 on page 53 in particular).

The claimed invention differs from the `040 publication teachings only by the recitation of antibody to Collagen XIII in claims 7, 13, 17, 23 and 43-44.

Nykvist et al teach that α1β1 integrin mediates cell adhesion to type XIII collagen (see abstract in particular).

The `440 patent teaches that cell adhesion plays an important role in human disease. These interactions proceed by the interaction of receptors upon the surface of a cell with proteins or glycosaminoglycans upon the surface of another cell or within the extracellular matrix. The `440 patent further teaches that routes to the interruption of these interactions typically involve competitive inhibition of these receptor-ligand interactions, for example, with antibodies, soluble ligands which act as receptor antagonists, soluble receptors, or other competitors (see col., 1 lines 17-30 in particular).

Hagg et al teach anti-human type XIII collagen antibodies, anti-XIII/NC1-1 and anti-XIII/NC3-1 (see page 15591, 1st col., *under Preparation and Affinity Purification of Antipeptide Antibodies* in particular).

The limitations recited in claims 6, 8, 12, 15, 28, 46-52 and 67-71 would be expected properties of the Hagg's et al antibodies in absence of evidence to the contrary.

Given Nykvist *et al* teachings that α1β1 integrin mediates cell adhesion to type XIII collagen. Further, given the fact that routes to the interruption cell adhesion interactions typically involve competitive inhibition of these receptor-ligand interactions with either receptor antagonists, antibodies or other competitors, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the α1β1 integrin receptor inhibitor such as an antibody taught by the `040 publication with anti-collagen type XIII antibody taught by Hagg *et al.*

Further, a person of ordinary skill in the art would have recognized the interchangeability of the element shown in the prior art for the corresponding anti-collagen type XIII blocking antibodies recited in the claim. *Caterpillar Inc. v. Deere & Co.*, 224 F.3d 1374, 56 USPQ2d 1305 (Fed. Cir. 2000); *Al-Site Corp. v. VSI Int' l, Inc.*, 174 F.3d 1308, 1316, 50 USPQ2d 1161, 1165 (Fed. Cir. 1999); *Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus. Inc.*, 145 F.3d 1303, 1309, 46 USPQ2d 1752, 1757 (Fed. Cir. 1998); *Lockheed Aircraft Corp. v. United States,* 193 USPQ 449, 461 (Ct. Cl. 1977*); Data Line Corp. v. Micro Technologies, Inc.*, 813 F.2d 1196, 1 USPQ2d 2052 (Fed. Cir. 1987).

From the combined teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

10. Claims 10, 21, 25 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 99/61040 (of record) in view of Nykvist *et al* (JBC 275(11):8255-8261, 2000), U.S. Pat. No. 5,567,440 and Hagg *et al* (JBC, 273(25):15590-15597, 1998, IDS ref) as applied to claims 6-8, 11-13, 15, 17, 23, 28, 43-44, 46-52 and 68-71 above, and further in view of Harlow.

The teachings of WO `040 publication, Nykvist et al, the US. `440 patent and Hagg et al, have been discussed, supa.

The claimed invention differ from the reference teachings in the recitation that the antibody is monoclonal antibody in claims 10, 21, 25 and 45.

Harlow et al teach a method of producing monoclonal antibodies comprising immunizing an animal (i.e. a mouse) with a protein or portion thereof (i.e. fragments), harvesting spleen cells from said animal, fusing said spleen cells with myeloma cell line, and culturing said fused cells (i.e hybridoma) under conditions that allow production of said antibody. Harlow et al further teach that the monoclonal antibodies stems from their specificity, homogeneity and ability to be produced in unlimited quantities (see pages 141-157 in particular).

Therefore, it would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to produce monoclonal antibody using the method taught by Harlow with the immunogenic fragment taught by Hagg *et al.*

One ordinary skill in the art at the time the invention was made would have been motivated to do so because the monoclonal antibodies produced exhibit a high degree of specificity and great affinity as taught by Harlow.

From the combined teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expection of success in producing the claimed invention. Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

11. Claims 6-8, 11-13, 15, 17, 23, 28, 43-44, 46-52 and 68-71 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 6,492,325 (of record) in view of Nykvist *et al* (JBC 275(11):8255-8261, 2000), U.S. Pat. No. 5,567,440 and Hagg *et al* (JBC, 273(25):15590-15597, 1998, IDS ref).

The '325 patent teaches and claims a of treating renal fibrosis or crescentic glomerulonephritis (chronic inflammatory diseases of the kidney), in a patient comprising administering to the patient an effective amount of an $\alpha 1\beta 1$ integrin receptor inhibitor (a blocking agent) (see patented claims 1 and col., 5, lines 40-55 in particular), wherein the $\alpha 1\beta 1$ integrin receptor inhibitor is a blocking agent that binds to the $\alpha 1\beta 1$ integrin receptor binding site on the surface of a kidney cell (col., 5, lines 51-55 in particular), wherein the agent is an antibody, other agents that inhibit the $\alpha 1\beta 1$ integrin receptor by other mechanisms can also be use (see col., 5, lines 58-61 and col., 32 under Example 5 in particular).

The claimed invention differs from the '325 patent teachings only by the recitation of antibody to Collagen XIII in claims 7, 13, 17, 23 and 43-44.

Nykvist *et al* teach that $\alpha 1\beta 1$ integrin mediates cell adhesion to type XIII collagen (see abstract in particular).

The '440 patent teaches that cell adhesion plays an important role in human disease. These interactions proceed by the interaction of receptors upon the surface of a cell with proteins or glycosaminoglycans upon the surface of another cell or within the extracellular matrix. The '440 patent further teaches that routes to the interruption of these interactions typically involve competitive inhibition of these receptor-ligand interactions, for example, with antibodies, soluble ligands which act as receptor antagonists, soluble receptors, or other competitors (see col., 1 lines 17-30 in particular).

Hagg et al teach anti-human type XIII collagen antibodies, anti-XIII/NC1-1 and anti-XIII/NC3-1 (see page 15591, 1st col., *under Preparation and Affinity Purification of Antipeptide Antibodies* in particular).

The limitations recited in claims 6, 8, 12, 15, 28, 46-52 and 67-71 would be expected properties of the Hagg's et al antibodies in absence of evidence to the contrary.

The term "having" in claims 53-59 would open up the claims to include the antibodies that bind to the Collagen type XIII (the full length collagen type XIII minus one amino acid).

Given Nykvist *et al* teachings that $\alpha 1\beta 1$ integrin mediates cell adhesion to type XIII collagen. Further, given the fact that routes to the interruption cell adhesion interactions typically involve competitive inhibition of these receptor-ligand interactions with either receptor antagonists, antibodies or other competitors, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the $\alpha 1\beta 1$ integrin receptor inhibitor such as an antibody taught by the '325 patent with anti-collagen type XIII antibody taught by Hagg *et al.*

Further, a person of ordinary skill in the art would have recognized the interchangeability of the element shown in the prior art for the corresponding anti-collagen type XIII blocking antibodies recited in the claim. *Caterpillar Inc. v. Deere & Co.*, 224 F.3d 1374, 56 USPQ2d 1305 (Fed. Cir.

2000); *Al-Site Corp. v. VSI Int' l, Inc.*, 174 F.3d 1308, 1316, 50 USPQ2d 1161, 1165 (Fed. Cir. 1999); *Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus. Inc.*, 145 F.3d 1303, 1309, 46 USPQ2d 1752, 1757 (Fed. Cir. 1998); *Lockheed Aircraft Corp. v. United States,* 193 USPQ 449, 461 (Ct. Cl. 1977*); Data Line Corp. v. Micro Technologies, Inc.*, 813 F.2d 1196, 1 USPQ2d 2052 (Fed. Cir. 1987).

From the combined teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

12. Claims 10, 21, 25 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 6,492,325 (of record) in view of Nykvist *et al* (JBC 275(11):8255-8261, 2000), U.S. Pat. No. 5,567,440 and Hagg *et al* (JBC, 273(25):15590-15597, 1998, IDS ref) as applied to claims 6-8, 11-13, 15, 17, 23, 28, 43-44, 46-52 and 68-71 above, and further in view of Harlow.

The teachings of US. `325 patent, Nykvist et al, the US. `440 patent and Hagg et al, have been discussed, supa.

The claimed invention differ from the reference teachings in the recitation that the antibody is monoclonal antibody in claims 10, 21, 25 and 45.

Harlow et al teach a method of producing monoclonal antibodies comprising immunizing an animal (i.e. a mouse) with a protein or portion thereof (i.e. fragments), harvesting spleen cells from said animal, fusing said spleen cells with myeloma cell line, and culturing said fused cells (i.e hybridoma) under conditions that allow production of said antibody. Harlow et al further teach that the monoclonal antibodies stems from their specificity, homogeneity and ability to be produced in unlimited quantities (see pages 141-157 in particular).

Therefore, it would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to produce monoclonal antibody using the method taught by Harlow with the immunogenic fragment taught by Hagg *et al.*

One ordinary skill in the art at the time the invention was made would have been motivated to do so because the monoclonal antibodies produced exhibit a high degree of specificity and great affinity as taught by Harlow.

From the combined teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expection of success in producing the claimed invention. Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

13. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

14. Claims 6-8, 11-13, 15, 17, 23, 28, 43-44, 46-52 and 68-71 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 25, 34-36, 40, 43-45, 52 of copending Application No. 10/099,573 in view of Nykvist *et al,* U.S. Pat. No. 5,567,440 and Hagg *et al.*

The `573 application claims a method of limiting renal fibrosis in a patient comprising reducing TGF-b1 activity in the patient while inhibiting $\alpha 1\beta 1$ integrin receptors of patient's kidney cells (see pending claim 25). Further the `573 application claims a method of delaying the onset of and/or slowing the progression of kidney disease in a patient, the method comprising administering to the patient an effective amount of an $\alpha 1\beta 1$ integrin receptor inhibitor (pending claim 34), wherein the $\alpha 1\beta 1$integrin receptor inhibitor comprises a peptide in claim 35, wherein $\alpha 1\beta 1$integrin receptor inhibitor is an antibody in claim 36. The `573 application further claims a method of synergistically delaying the onset of and/or slowing the progression of kidney disease in a patient, the method comprising administering to the patient an $\alpha 1\beta 1$ integrin receptor inhibitor in claim 43, wherein the $\alpha 1\beta 1$integrin receptor inhibitor comprising a peptide in claim 44, wherein the $\alpha 1\beta 1$ integrin receptor inhibitor is an antibody in claim 45.

The claimed invention differs from the `573 application teachings only by the recitation of antibody to Collagen XIII in claims 7, 13, 17, 23, 43-44.

Nykvist *et al* teach that α1β1 integrin mediates cell adhesion to type XIII collagen (see abstract in particular).

The `440 patent teaches that cell adhesion plays an important role in human disease. These interactions proceed by the interaction of receptors upon the surface of a cell with proteins or glycosaminoglycans upon the surface of another cell or within the extracellular matrix. The `440 patent further teaches that routes to the interruption of these interactions typically involve competitive inhibition of these receptor-ligand interactions, for example, with antibodies, soluble ligands which act as receptor antagonists, soluble receptors, or other competitors (see col., 1 lines 17-30 in particular).

Hagg et al teach anti-human type XIII collagen antibodies, anti-XIII/NC1-1 and anti-XIII/NC3-1 (see page 15591, 1st col., *under Preparation and Affinity Purification of Antipeptide Antibodies* in particular).

The limitations recited in claims 6, 8, 12, 15, 27, 28, 46, 47-52 would be expected properties of the Hagg's et al antibodies in absence of evidence to the contrary.

The term "having" in claims 53-59 would open up the claims to include the antibodies that bind to the Collagen type XIII (the full length Collagen XIII minus one amino acid).

Given Nykvist *et al* teachings that α1β1 integrin mediates cell adhesion to type XIII collagen. Further, given the fact that routes to the interruption cell adhesion interactions typically involve competitive inhibition of these receptor-ligand interactions with either receptor antagonists, antibodies or other competitors, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the α1β1 integrin receptor inhibitor such as an antibody taught by `573 application with anti-collagen type XIII antibody taught by Hagg *et al.*

Further, a person of ordinary skill in the art would have recognized the interchangeability of the element shown in the prior art for the corresponding anti-collagen type XIII blocking antibodies recited in the claim. *Caterpillar Inc. v. Deere & Co.*, 224 F.3d 1374, 56 USPQ2d 1305 (Fed. Cir. 2000); *Al-Site Corp. v. VSI Int' l, Inc.*, 174 F.3d 1308, 1316, 50 USPQ2d 1161, 1165 (Fed. Cir. 1999); *Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus. Inc.*, 145 F.3d 1303, 1309, 46 USPQ2d 1752, 1757 (Fed. Cir. 1998); *Lockheed Aircraft Corp. v. United States,* 193 USPQ 449, 461 (Ct. Cl. 1977*); Data Line Corp. v. Micro Technologies, Inc.*, 813 F.2d 1196, 1 USPQ2d 2052 (Fed. Cir. 1987).

From the combined teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.
This is a provisional obviousness-type double patenting rejection.

15. Claims 10, 21, 25 and 45 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 25, 34-36, 40, 43-45, 52 of copending Application No. 10/099,573 in view of Nykvist *et al,* U.S. Pat. No. 5,567,440 and Hagg *et al* as applied to claims 6-8, 11-13, 15, 17, 23, 28, 43-44, 46-52 and 68-71 above, and further in view of Harlow.

The teachings of US. `573 Application, Nykvist et al, the US. `440 patent and Hagg et al, have been discussed, supra.

The claimed invention differs from the reference teachings in the recitation that the antibody is monoclonal antibody in claims 10, 21, 25 and 45.

Harlow et al teach a method of producing monoclonal antibodies comprising immunizing an animal (i.e. a mouse) with a protein or portion thereof (i.e. fragments), harvesting spleen cells from said animal, fusing said spleen cells with myeloma cell line, and culturing said fused cells (i.e hybridoma) under conditions that allow production of said antibody. Harlow et al further teach that the monoclonal antibodies stems from their specificity, homogeneity and ability to be produced in unlimited quantities (see pages 141-157 in particular).

Therefore, it would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to produce monoclonal antibody using the method taught by Harlow with the immunogenic fragment taught by Hagg *et al.*

One ordinary skill in the art at the time the invention was made would have been motivated to do so because the monoclonal antibodies produced exhibit a high degree of specificity and great affinity as taught by Harlow.

From the combined teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expection of success in producing the claimed invention. Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

16. Claim 55-59 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maher Haddad whose telephone number is (571) 272-0845. The examiner can normally be reached Monday through Friday from 7:30 am to 4:00 pm. A message may be left on the examiner's voice mail service. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Chan can be reached on (571) 272-0841. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

May 16, 2007

Maher Haddad

Maher Haddad, Ph.D.
Primary Examiner
Technology Center 1600